Relation between Climate Changes, Quality of Life and Psychological Status among Assiut Population: Online Based Survey

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Abstract

The effects of climate change pose significant threats to ecosystems, biodiversity, and the well-being of human populations. **Aim:** The study aimed to explore the relation between climate changes, quality of life and psychological status among Assiut city population. **Setting:** The study was conducted at Assiut city by utilizing web-based online survey. The study sample was 1300 as a convenience sample. Five tools were used; the socio-demographic data, Climate Change Anxiety Scale, Climate Change Worry Scale, Self- Efficacy Scale and the WHOQOL-BREF questionnaire. **Results:** There was strong positive correlation between climate change worry and climate change anxiety Scales (r value .838). Moreover, there was also positive correlation between self-efficacy, climate change worry and climate change anxiety scales (r value, .088, .174) respectively. **Conclusions & Recommendation:** The research outcomes revealed a substantial association between anxiety and worry levels and socio-demographic factors. Furthermore, the study demonstrated a noteworthy correlation between socio-demographic characteristics and overall quality of life which significantly impact individuals' well-being in relation to climate change-induced anxiety and worry. Implementing an educational program on climate change among the population through mass media as a strategy to address the challenges posed by climate change

Keyword: Climate change anxiety, Climate change worry, Self-efficacy & Quality of life

Introduction:

Climate change has emerged as a pressing threat to global health in the 21st century, with health professionals worldwide grappling with the manifold health consequences of this ongoing crisis. **The American Psychological Association (2020) and Clayton (2020)** have highlighted the dual threat climate change poses to both the planet's health and human well-being, evoking concerns and uncertainties among younger generations. As global warming intensifies, there is growing evidence to suggest that more young individuals will experience emotional distress, including anxiety and worry **(Clayton, 2017).**

Global climate change (GCC) is a complex and multifaceted phenomenon that can influence human behavior and quality of life **(Chen et al., 2023). Obradovich et al. (2018)** have noted that social, economic, and physical systems are key determinants of psychological well-being, and climate change can exacerbate risk factors for mental disorders such as anxiety, stress, and mood disorders. These psychological disorders can have far-reaching consequences for an individual's quality of life (QoL), overall health, and productivity, with even mild levels of distress impacting psychological and immunological functioning and the ability to cope with challenges **(Seixas & Hoeffel, 2022).**

Climate change is expected to exacerbate the overall burden of mental health issues due to the acute environmental threats resulting from global warming. Research has consistently demonstrated that climatic changes pose significant risks to both human systems and quality of life **(Obradovich et al., 2018).**

As the climate change, the likelihood of diseases and deaths linked to extreme heat and poor air quality increases, affecting various aspects of life quality in different populations. The consequences of climate change on health are evident in the rise of illnesses, mortality, healthcare costs, and lost work hours due to inadequate inpatient and outpatient care, as well as the emergence of new or atypical diseases in certain regions. Notably, more vulnerable populations, including the elderly, children, and individuals with chronic health conditions, are disproportionately affected by these changes **(Chang et al., 2020).**

Climate-related disasters and extremes can have far-reaching impacts on both social and ecological systems, disrupting the provision and flow of essential ecosystem services that are critical for human health **(Estoque et al., 2019).** Environmental factors, including changes in rainfall and temperature

patterns, are gaining increasing attention in the field of psychiatry, as they can elicit a range of responses, from mild stress to clinical disorders such as depression, anxiety, post-traumatic stress, suicidal thoughts, and psychosomatic and neurological disorders (**Loganovsky et al., 2019 &Cianconi et al., 2020).** However, research on climate anxiety is challenging due to its multifaceted nature, which can manifest as worry, intense fear, or feelings of overwhelm (**Pihkala, 2020).**

Negative efficacy beliefs, or the belief that one lacks the ability to address climate change may contribute to feelings of overwhelm and anxiety among young adults **(Clayton, 2020).** Therefore, it is crucial to examine the role of efficacy beliefs, particularly self-efficacy and collective efficacy, in how individuals respond to climate worry and their support for environmental actions **(Mah et al., 2020).** High levels of perceived self-efficacy, or the belief in one's personal ability to address climate change, are associated with greater pro-environmental behaviors **(Clayton et al., 2017).**

Community health and psychiatric nurses are well-positioned to develop and implement educational and research programs that address the impact of climate change on individuals, families, and communities. By leveraging their unique position, these nurses can help raise awareness of the psychological and environmental consequences of climate change and promote resilience-building strategies to mitigate its effects. In conclusion, the interplay between climate-related disasters, environmental factors, and psychological responses highlights the need for a comprehensive approach to addressing the psychological impacts of climate change **(Harris et al., 2022).**

Significance of the study

Egypt is particularly vulnerable to the adverse effects of climate change due to its geographical location and limited access to resources for mitigating the impacts of climate shocks. This is highlighted in Egypt's Vision 2030, which prioritizes sustainable development and addresses the challenges posed by climate change through scientific research and problem-solving. Climate change affects humans in two primary ways, both physiological and psychological **(Rabie, 2021; World Bank Group, 2023)**, making it essential to investigate the relationship between climate change, quality of life, and psychological well-being in Assuit Governorate. This study aimed to provide a better understanding of the magnitude of this issue and inform effective solutions.

Aim of the study:

The study aimed to explore the relation between climate changes, quality of life and psychological status among Assiut Governorate population.

Research questions:

1. What is the extent of climate change anxiety, concern about climate change, and self-efficacy within the population of Assiut Governorate?
2. Is there a correlation between climate change anxiety, quality of life, and self-efficacy in the Assiut Governorate population?

Research Design:

For this study, a widespread online survey was utilized as the primary means of gathering data from the population.

Setting:

The research was carried out in Assiut Governorate, situated in Upper Egypt, positioned to the north of Sohag and Minya. The governorate has a population of 4,941,348 residents.

Sample Size and technique:

This study utilized a convenience sampling method. Participants were enlisted through social media platforms, including WhatsApp, Telegram, and Facebook. The presentation of the research adhered to the guidelines outlined in the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) **(Eysenbach, 2004).**

The EPI Info 7 software was employed to calculate the required sample size, taking into account several parameters:

- Total population size (for the finite population correction factor or fpc) (N): 4,941,348
- Estimated percentage frequency of the outcome factor in the population (p): 50% ± 4
- Confidence limits as a percentage of 100 (absolute ± %) (d): 4%
- Design effect (for cluster surveys-DEFF): 1

At a 99.9% confidence interval (CI), the calculated sample size was determined to be 1,037 individuals. To account for potential dropouts (25%), an additional 265 participants were included, making the final sample size approximately 1,300 people.

The criteria for participant inclusion in the study were set as follows: Individuals aged 18 years or older, residing in Assiut Governorate, capable of completing an online questionnaire, having internet access, and expressing a willingness to participate. Consequently, the study's participants comprised members of the general community, healthcare workers, university students, and university staff.

Tools of the study:

The information was gathered via an electronic survey, which comprised four primary sections:

Tool (I): Personal data:

The researcher designed this instrument, encompassing six inquiries related to personal details such as age, gender, occupation, marital status, place of residence, and educational attainment of the individuals.

Tool (II): Climate Change Anxiety Scale (CCAS):

The Climate Change Anxiety Scale (CCAS), developed by **Clayton and Karazsia in 2020,** is

composed of 13 items. Responses are recorded on a 5-point Likert scale, ranging from 1 (Never) to 5 (Almost Always). The CCAS is divided into two subscales. The first, the Cognitive-Emotional Impairment subscale, includes items 1-8, with the first four items assessing the impact of climate change on concentration and emotions, and items 5-8 evaluating the extent to which thoughts about climate change are perceived as unhealthy.

The second subscale, the Functional Impairment subscale, encompasses items 9-13 and focuses on whether emotions related to climate change disrupt daily functioning. The overall score of the CCAS is derived from the sum of all items, with higher scores indicating greater anxiety about climate change. The scoring categories are high (48-64 points), moderate (31-47 points), and low (13-30 points).

Tool (III): Climate Change Worry Scale (CCWS):
The Climate Change Worry Scale (CCWS), created by **Stewart, 2021,** is a self-report tool designed to measure the extent of rumination and worry specifically about climate change. This scale includes ten items, each rated on a five-point Likert scale, where 1 signifies 'never', 2 'rarely', 3 'sometimes', 4 'often', and 5 'always'. The total scores on the CCWS categorize the level of climate change worry into three tiers: high (30-40 points), moderate (19-29 points), and low (8-18 points).

Tool (IV): Self- Efficacy Scale:
Developed by **Van Zomeren et al., 2010,** this scale consists of 8 questions, each rated on a 5-point Likert scale. The response options range from "strongly disagree" (1) to "strongly agree" (5). Each question can score a minimum of 1 and a maximum of 5. The total score is obtained by adding the scores of each question, with a possible range from 8 to 40. A higher score in the range of 30-40 indicates a greater level of self-efficacy, while scores are considered moderate between 19-29 and low between 8-18.

Tool V: The WHOQOL-BREF questionnaire:
The Arabic version of the WHOQOL-BREF questionnaire includes 26 items. Out of these, 24 items are categorized into four domains: physical health (7 items), psychological well-being (6 items), social relationships (3 items), and environment (8 items). The remaining two items assess self-perceived quality of life and satisfaction with health. Each domain uses a Likert response scale with varying parameters such as intensity (ranging from 'nothing' to 'extremely'), capacity ('nothing' to 'completely'), frequency ('never' to 'always'), and evaluative scales ('very dissatisfied' to 'very satisfied'; 'very bad' to 'very good'), all on a five-point scale (1 to 5). The total score of the questionnaire can range from 26 to 130, with higher scores indicating a better quality of life. This assessment was standardized by the **WHO, 2012**.

Reliability and validity
The subscales of the Climate Change Anxiety Scale (CCAS) demonstrated high reliability, with Cronbach's alpha values of .96 and .93, respectively, as reported by **Clayton & Karazsia, 2020**. The Climate Change Worry Scale (CCWS), validated by Stewart in 2021, also showed excellent reliability with a Cronbach's alpha of .95. The Self-Efficacy Scale, developed by **Van Zomeren et al., 2010**, was validated with a high Cronbach's alpha of .94, indicating outstanding reliability. Furthermore, the WHOQOL-BREF questionnaire was validated with Cronbach's alpha coefficients of ≥0.7, as established by the **WHO, 2012**, confirming its reliability.

Validity of the tool:
The tool revised by five experts from community health nursing and psychiatric and mental health nursing.

Pilot study:
A preliminary study involving 10% individuals was conducted to evaluate the tools for their suitability, clarity, and any necessary adjustments were made based on the feedback received.

In the administrative phase, consent from the population of Assiut city was obtained online after explaining the study's purpose and assuring participants of privacy and confidentiality. This process was carried out through various social media platforms such as Facebook, WhatsApp, and Telegram.

Ethical consideration
The research proposal received approval from the Ethical Committee at the Faculty of Nursing. There were no risks identified for the participants during the research process. Participants were informed about their right to discontinue their participation in the study at any time. The study adhered to standard ethical principles in clinical research, ensuring both confidentiality and anonymity for all participants.

Statistical analysis:
The collected data was reviewed and prepared for input into a computer. The data was analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Quantitative data was presented as mean ± standard deviation/standard error, and qualitative data was displayed as frequencies and percentages. Tests for data normality were conducted, and appropriate statistical tests, such as the Mann-Whitney U Test and Spearman correlation, were applied. Linear regression models were also utilized. For comparing quantitative data among three or more groups, the One-way ANOVA T-test was used. A significance level was set at a P-value of less than 0.01, with a P-value below 0.05 (P < 0.05) being considered statistically significant.

Result

Table (1): Personal characteristics of the studied population in Assiut Governorate (n=1300)

Personal characteristics	No	%
Age group		
Less than 20 years	477	36.7
From 20- Less than 30 years	639	**49.2**
From 30-40 years	129	9.9
More than 40 years	55	4.2
Mean±SD(range)	**26.93±10.16(16-60)**	
Gender		
Male	589	45.3
Female	711	**54.7**
Occupation		
Not working	793	**61.0**
Working	507	39.0
Marital Status		
Single	935	71.9
Married	296	22.8
Divorced	25	1.9
Widow	44	3.4
Residence		
Rural	653	**50.2**
Urban	647	**49.8**
Education Level		
Read and write	16	1.2
Primary education	26	2.0
Preparatory education	45	3.5
Secondary	172	13.2
University	895	**68.8**
Postgraduate	146	11.2

Table (2): Mean score of climate change anxiety, self-efficacy and quality of life of the studied population in Assiut Governorate (n=1300)

| Descriptive Statistics	Max Score	Mean±SD	Range
Climate Change Worry Scale	**40**	**18.81±7.47**	**8-40**
Cognitive-Emotional Impairment	40	18.23±6.82	8-40
Functional Impairment	25	11.65±4.87	5-25
Climate Change Anxiety Scale	**65**	**29.89±11.03**	**13-65**
Perceived self-efficacy	25	16.6±3.91	5-25
Perceived collective efficacy	15	10.39±2.71	3-15
Self-efficacy scale	**40**	**26.99±5.96**	**8-40**
Physical domain	35	22.77±4.68	7-35
Psychological domain	30	18.86±4.39	6-30
Social domain	15	10.06±2.69	3-15
Environmental domain	40	23.41±5.71	8-40
The WHOQOL-BREF	**100**	**63.26±12.74**	**20-99.23**
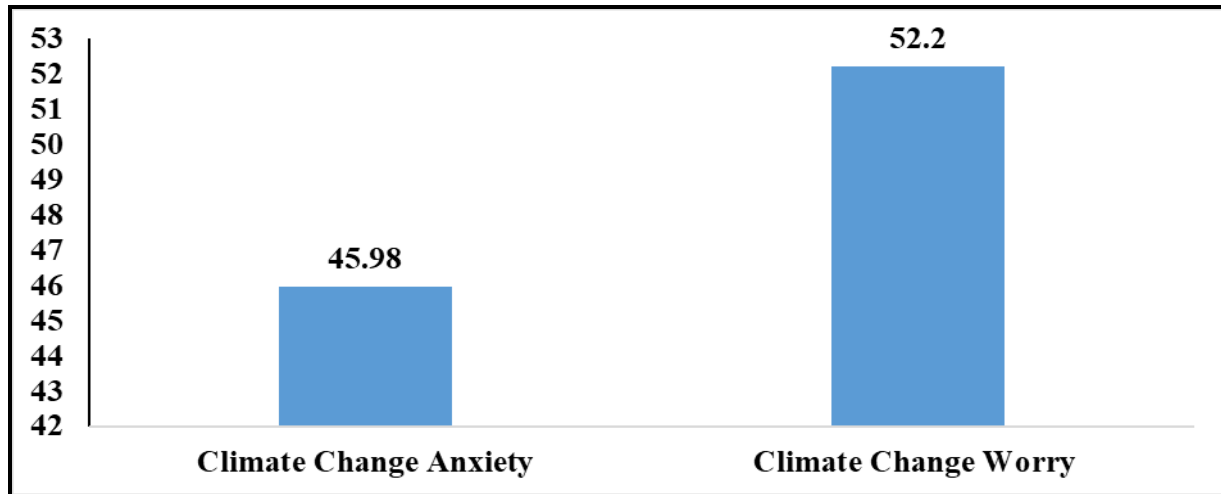
Figure (1): Prevalence of climate change anxiety and worry among the studied population in Assiut Governorate (n=1300)

Table (3): Correlation Co efficient between Climate Change Anxiety, Worry, Self-efficacy and WHOQOL-BREF for the Studied population (n=1300)

Scale	F1	F2	F3	F4
Climate Change Anxiety Scale (CCAS)	1			
Climate Change Worry Scale (CCWS)	.838**	1		
Self-efficacy scale	.088**	.174**	1	
The WHOQOL-BREF	-.293-**	-.259-**	.220**	1

*** Statistically Significant correlation at P. value <0.01*

Table (4): Predictors of climate change anxiety, climate change worry and self-efficacy of the studied population in Assiut governorate (n=1300)

Personal data	Beta	T	Sig.	CI 95%
Dependent variable is Climate Change Anxiety				
Age	-0.03	-0.70	0.484	(-0.11-0.05)
Gender	-0.05	-1.68	0.094	(-2.3-0.18)
Occupation	0.15	4.45	0.000**	(1.87-4.83)
Marital Status	0.09	2.87	0.004**	(0.46-2.45)
Residence	0.04	1.59	0.112	(-0.23-2.19)
Education Level	-0.26	-9.28	0.000**	(-4.12--2.68)
Dependent variable is Climate Change Worry				
Age	0.02	0.49	0.625	(-0.04-0.07)
Gender	-0.01	-0.18	0.860	(-0.93-0.77)
Occupation	0.16	4.88	0.000**	(1.51-3.54)
Marital Status	0.06	1.86	0.063	(-0.04-1.33)
Residence	0.05	1.60	0.110	(-0.15-1.5)
Education Level	-0.23	-8.01	0.000**	(-2.5--1.52)
Dependent variable is Self-efficacy				
Age	-0.01	-0.27	0.785	(-0.05-0.04)
Gender	0.10	3.33	0.001**	(0.5-1.94)
Occupation	0.03	0.75	0.453	(-0.53-1.19)
Marital Status	0.00	-0.02	0.983	(-0.59-0.57)
Residence	-0.03	-1.05	0.292	(-1.08-0.33)
Education Level	0.04	1.31	0.190	(-0.14-0.7)

***statistically Significant Factor at P. value <0.01*

Table (5): Relation between Climate Change Anxiety, Worry and Self-efficacy scales with personal characteristics for the studied population (n=1300)

Personal characteristics	Climate Change Anxiety Scale		Climate Change Worry Scale		Self-efficacy scale	
	Mean±SD	Range	Mean±SD	Range	Mean±SD	Range
Age group (year)						
< 20	27.37±10.03	13-63	16.75±6.98	8-36	27.04±6.11	8-40
From 20-30	30.48±11.32	13-65	19.47±7.57	8-40	27.16±5.99	8-40
From 30-40	34.7±10.81	13-53	22.09±7.09	8-34	26.91±4.76	12-35
> 40 years	33.47±10.92	13-51	21.4±6.44	8-32	24.75±6.49	8-36
P value	**F=19.86 P= 0.000****		**F=125.58 P=0.000****		**F=12.80 P=0.039***	
Gender						
Male	32.32±11.45	13-65	20.09±7.66	8-40	26.21±6.01	8-40
Female	27.87±10.24	13-65	17.75±7.14	8-40	27.63±5.85	8-40
P value	**T=54.54 P=0.000****		**T=32.34 P=0.000****		**T=18.68 P=0.000****	
Occupation						
Not working	27.74±10.22	13-65	17.28±7.17	8-40	27.1±6.18	8-40
Working	33.24±11.41	13-65	21.21±7.3	8-40	26.82±5.6	8-40
P value	**T=81.72 P=0.000****		**T=91.50 P=0.000****		**T=0.69 P=0.406**	
Residence						
Rural	28.04±10.6	13-65	17.57±7.44	8-40	27.3±6.22	8-40
Urban	31.74±11.15	13-65	20.06±7.3	8-39	26.67±5.67	8-40
P value	**T=37.59 P=0.000****		**T=37.22 P=0.000****		**T=3.70 P=0.055**	
Education Level						
Read and write	34.06±13.25	13-65	21.38±8.25	8-40	26.94±6.05	19-40
Primary	38.35±7.48	21-55	24.15±5.11	14-33	25.04±4.36	17-32
Preparatory	40.47±5.06	27-48	25.62±3.77	15-36	25.02±4.84	15-32
Secondary	39.2±9.08	13-56	24.22±5.55	8-34	26.1±5	8-38
University	27.74±10.4	13-65	17.44±7.29	8-40	27.24±6.14	8-40
Postgraduate	26.83±9.97	13-58	17.55±7.24	8-39	27.42±6.22	8-40
P value	**F=154.77 P=0.000****		**F=140.84 P=0.000****		**F=12.79 P=0.016***	

- Independent T-test quantitative data between the two groups
- One-way Anova T-test quantitative data between the three groups or more
*Significant level at P value < 0.05,   **Significant level at P value < 0.01

Table (6): Comparison between the WHOQOL-BREF with personal characteristics for the studied population (n=1300)

Personal characteristic	Physical domain	Psychological domain	Social domain	Environmental domain	WHOQOL-BREF
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Age group					
< 20	23.57±4.73	19.42±4.22	10.41±2.48	23.97±5.59	65.17±11.99
From 20-30	22.45±4.65	18.55±4.37	9.95±2.74	23.1±5.84	62.43±13.03
From 30-40	21.72±4.19	18.38±4.89	9.46±3.06	22.85±5.63	60.88±13.35
> 40 years	22.05±4.67	18.67±4.5	9.62±2.64	23.53±5.15	61.83±12.24
P. value	**0.000****	**0.006****	**0.001****	**0.052**	**0.000****
Gender					
Male	22.41±4.88	18.28±4.86	9.39±2.91	23.07±5.97	61.38±13.86
Female	23.08±4.48	19.34±3.91	10.61±2.36	23.69±5.47	64.81±11.51
P. value	**0.010***	**0.000****	**0.000****	**0.049***	**0.000****
Occupation					
Not working	23.21±4.85	19.09±4.3	10.35±2.51	23.73±5.78	64.41±12.55
Working	22.09±4.3	18.5±4.52	9.6±2.9	22.92±5.56	61.46±12.84
P. value	**0.000****	**0.017***	**0.000****	**0.013***	**0.000****
Residence					
Rural	23.39±4.73	19.4±4.16	10.56±2.44	23.66±5.38	64.98±11.81
Urban	22.15±4.54	18.31±4.56	9.55±2.84	23.16±6.02	61.52±13.39
P. value	**0.000****	**0.000****	**0.000****	**0.121**	**0.000****

Personal characteristic	Physical domain	Psychological domain	Social domain	Environmental domain	WHOQOL-BREF
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Education Level					
Read and write	21.56±4.1	18.5±3.06	9.63±1.75	24.06±4.43	62.26±7.51
Primary	21.08±3.6	17.73±3.69	8.54±2.66	23.65±6.33	59.02±11.18
Preparatory	19.27±2.59	14.78±3.77	7.51±2.31	20.36±5.27	51.57±10.02
Secondary	20.32±3.76	16.25±4.62	8.2±2.83	21.34±5.82	55.29±12.77
University	23.38±4.81	19.36±4.23	10.46±2.5	23.81±5.7	64.96±12.36
Postgraduate	23.49±4.04	20.36±3.53	10.88±2.33	24.21±4.94	66.66±10.5
P. value	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

- Independent T-test quantitative data between the two groups
- One-way Anova T-test quantitative data between the three groups or more
*Significant level at P value < 0.05,   **Significant level at P value < 0.01

Table (1): Indicates that nearly half (49.2%) of the participants in the study fell within the age range of 20 to less than 30 years, with a mean age of 26.93±10.16 (ranging from 16 to 60 years). Additionally, 54.7% of the participants were female. In terms of occupation and residence, the majority of them (61.0%) were unemployed, and half (50.2%) hailed from rural areas. Regarding education level, the majority (68.8%) of the participants had received a university education.

Table (2): Shows that the average climate change anxiety scores among the study participants were 29.89±11.03. The most significant impairment was observed in the cognitive-emotional aspect, with an average score of 18.23±6.82. In terms of self-efficacy, the average score was 26.99±5.96, with perceived self-efficacy averaging at 16.6±3.91. The overall mean score for quality of life in the studied group was 63.26±12.74. The environmental domain had the highest mean score of 23.41±5.71, followed by the physical domain at 22.77±4.68.

Figure (1): Indicates that 45.98% of the surveyed individuals experienced climate change anxiety, and a majority of them, accounting for 52.2%, expressed worry related to climate change.

Table (3): Demonstrated a significant positive correlation between the Climate Change Worry Scale and the Climate Change Anxiety Scale, with a correlation coefficient (r) of .838. Additionally, a positive correlation was observed between self-efficacy and both the Climate Change Worry and Climate Change Anxiety Scales, with correlation coefficients of .088 and .174, respectively. Conversely, a negative correlation was found between both climate change worry and climate change anxiety, and the quality of life, with correlation coefficients of -.293 and -.259, respectively.

Table (4): Presents the impact of personal data on climate change perceptions. The multivariate linear regression analysis indicates a significant association of climate change anxiety and worry with occupation and education level, with p-values of 0.000 for both factors, respectively. Additionally, the table highlights that self-efficacy was significantly correlated with gender, as evidenced by a p-value of 0.001.

Table (5): Demonstrates that there was a statistically significant difference in the levels of Climate Change Anxiety, Worry, and Self-Efficacy in relation to age, with respective p-values of 0.000, 0.000, and 0.039. Additionally, a statistically significant difference exists in the levels of Climate Change Anxiety, Worry, and Self-Efficacy when comparing genders, indicated by a p-value of 0.000. The table also reveals a statistically significant difference between Climate Change Anxiety and Worry scales in relation to occupation, with a p-value of 0.000.

Table (6): Indicates that there was a statistically significant difference between all aspects of quality of life (including physical, psychological, social relations, and environmental domains) and personal characteristics such as age, gender, occupation, residence, and educational level. However, exceptions are noted in the environmental domain, where no significant difference was observed with respect to age and residence, with p-values of 0.052 and 0.121, respectively.

Discussion
Climate change stands as a significant challenge in contemporary times, profoundly impacting the health and future prospects of populations (**Cianconi et al., 2020**). The increasing impact of climate change on mental health is a growing concern. This study focuses on examining the relationship between climate change, quality of life, and psychological well-being among the population of Assiut city.
The current study indicated an average age of 26.93±10.16 years for the participants, with over two-fifths between 20 and under 30 years. This study contrasts with **Innocenti et al., 2023**, who reported a

higher average age of 34.14 ± 11.07 years in their population.

In terms of gender distribution, this study found a majority of the studied sample were female, differing from **Reyes et al., 2023**, who reported a greater female representation in their study on Filipino Gen Z's mental health and climate change anxiety.

Regarding marital status, the present study observed that just under three-quarters of participants were single, aligning with findings by **Innocenti et al., 2023**. This similarity suggests a possible trend in marital status among those concerned with climate change.

The study's findings on climate change anxiety, where less than half of the population reported such anxiety, stand in contrast to **Heeren et al., 2022, Sciberras & Fernandom, 2021, and Clayton & Karazsia, 2020**, who all reported higher percentages of climate anxiety in their respective studies. This difference could be attributed to the long-term physical and mental health implications of climate disasters.

The interpretation of this difference could be multifaceted. One potential explanation might be that variations in study methodologies, sample characteristics, or measurement tools used to assess climate anxiety could contribute to the differences in reported percentages across studies.

Consistent with **Schwaab, 2022**, the current study found that more than half of the participants expressed worry about climate change. This could be linked to the higher awareness and education levels among younger generations.

The strong positive correlation between climate change worry and anxiety in the study echoes the findings of **Soutar & Wand, 2022**, and aligns with **Wilmer et al., 2021**, regarding the negative impact of anxiety on quality of life. However, direct comparisons with studies explicitly examining the relationship between climate change worry, anxiety, and quality of life are limited.

While the correlation between climate change worry and anxiety is consistent with previous research, the limitation mentioned suggests that direct comparisons with studies explicitly examining the relationship between climate change worry, anxiety, and quality of life are limited. This limitation implies that there may be gaps or differences in the existing literature when it comes to understanding the combined impact of climate change worry and anxiety on overall quality of life.

Significant demographic differences in climate anxiety, especially concerning age, gender, and education, were noted in our study, supporting findings by **Ogunbode et al., 2022**, and contrasting with **Wullenkord et al., 2021**. Similarly, **Clayton et al., 2023**, who found gender differences in climate change worry.

The fact that there are differences in findings across these studies underscores the complexity of the relationship between demographic variables and climate-related concerns. The variations may be attributed to diverse study populations, methodologies, cultural contexts, or regional differences.

The present study aligns with existing research by **Clayton & Karazsia, 2020 & Wullenkord et al., 2021** in identifying demographic predictors of climate anxiety, particularly gender and age.

A notable finding was the significant difference between quality of life and socio-demographic characteristics, except in the environmental domain with age, marital status, and residence. This contrasts with **Wong & Kim, 2018**, and may reflect the broad impact of climate change on various life aspects.

The interpretation suggests that the lack of significant differences in the environmental domain with certain socio-demographic characteristics may reflect the broad impact of climate change on various aspects of life. In other words, the environmental domain of quality of life may be influenced by climate-related factors that affect individuals across different demographic groups in a relatively consistent manner.

Educational level showed a significant correlation with self-efficacy in dealing with climate change, possibly due to education enhancing understanding and proactive planning abilities. It can be interpreted as the education can play a crucial role in shaping individuals' knowledge, awareness, and problem-solving skills. A higher level of education may provide individuals with the necessary tools and information to better understand the complexities of climate change. It may also contribute to a greater sense of self-efficacy, as individuals with more education might feel more capable and empowered to engage in proactive measures and adaptive behaviors to address climate-related challenges.

Strengths of this study include its cross-sectional design, suitable for determining prevalence, and its pioneering nature in exploring relationships between climate change, quality of life, and psychological status. However, limitations include the need for larger-scale future studies to validate these findings. The practical implications included understanding the socio-demographic dimensions of climate-related anxiety and its impact on overall quality of life allows for targeted and effective strategies that can contribute to building resilience, improving mental health, and fostering well-being in the face of climate change challenges.

Conclusions

The study findings highlighted a significant relationship between levels of anxiety and worry and various socio-demographic factors. Additionally, the research showed a significant link between socio-demographic attributes and the overall quality of life, profoundly affecting individual well-being in the context of anxiety and worry caused by climate change.

Recommendation

1. Implement educational initiatives on climate change through mass media to address climate-related issues within the community.
2. Establish a partnership between the Ministry of Health and the Ministry of Environment to enhance climate change awareness among the population and promote the adoption of eco-friendly practices.
3. Conduct additional research across diverse populations to explore climate change and identify strategies for mitigating its impact.

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